

# PATENT ABSTRACTS OF JAPAN

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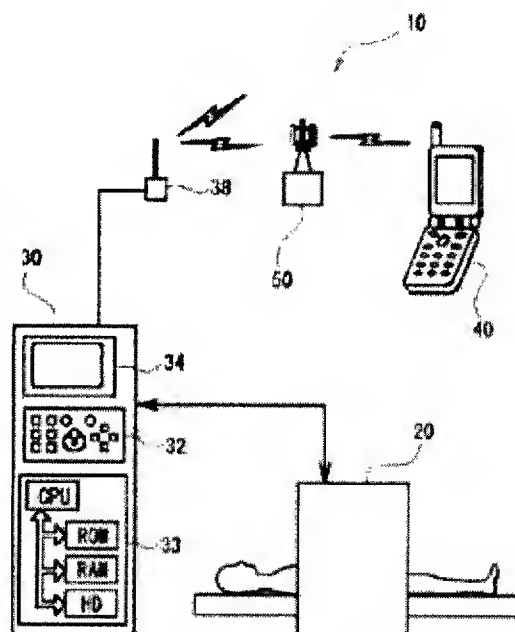
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## (54) MEDICAL EXAMINATION APPARATUS UTILIZING A MOBILE INFORMATION TERMINAL

(57)Abstract:

**PROBLEM TO BE SOLVED:** To provide a medical specialist with a means for promptly and accurately grasping patient's circumstances from a remote location.

**SOLUTION:** After an image of a patient's affected region is photographed using a medical photographic apparatus, the data of the photographed affected region is transferred to the mobile information terminal owned by the medical specialist. The specialist stationing at a remote location can confirm a transmitted image of the affected region and accurately grasp the patient's circumstances and make an accurate judgment thereof. The specialist can also obtain a renewed image of the affected region, when necessary, by transmitting a controlled data on the revised photophraphic scope of the affected region to the medical photographic apparatus through his mobile information terminal.



[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the art of performing the telediagnosis, by communicating with a Personal Digital Assistant in detail the affected part picture photoed using medical equipment about the art of diagnosing using a patient's affected part picture.

[0002]

[Description of the Prior Art] When cerebral hemorrhage and urgent patients, such as volvulus, are carried, laminagram or a projection photograph of the affected part, etc. is taken, the situation of the affected part is grasped, and an emergent operation must be performed if it is with necessity. Although it becomes important to grasp the situation of the affected part correctly from the photoed picture on the occasion of this judgment, it is not necessarily easy to grasp the situation of the affected part from a picture, and in order to grasp a situation correctly, judgment of the specialist who gained experience is required for it in many cases.

[0003] There is not always a specialist near the spot where the urgent patient was carried, of course. For example, due to business, such as attending the meeting of the case where the time when the urgent patient was carried is the midnight in which a specialist is not, or a society, while a specialist takes an official trip, an urgent patient may be carried. In such a case, while the medical practitioner of duty or the medical practitioner of charge looks at the picture of the photoed affected part, it will look for a specialist's judgment by telephone.

[0004]

[Problem(s) to be Solved by the Invention] However, it was difficult to tell the situation of the photoed affected part orally, and also although it was called the specialist, there was a problem that the case where an appropriate judgment cannot be made might arise. When judgment is difficult, I have to run to the spot in a hurry, or I have a picture of the affected part sent by some methods, such as a facsimile, and it must check, but even when I have a picture sent, the apparatus which can receive a picture must be looked for. Therefore, in any case, also when not enough for urgent business, it might produce.

[0005] This invention is made in order to solve above-mentioned SUBJECT in conventional technology, and it contacts promptly to the specialist who is not in the spot when an urgent patient is carried, and an object of this invention is to provide art with him. [ able for a specialist to grasp the situation of the affected part correctly and to make an appropriate judgment ]

[0006]

[The means for solving a technical problem, and its operation and effect] In order to solve at least a part of above-mentioned SUBJECT, the medical-diagnosis device of this invention adopted the next composition. Namely, a photographing area setting-out means to be a medical-diagnosis device which photos and displays a patient's affected part picture, and to set up the photographing area of said affected part picture, The affected part image photographing means which photos the affected part picture of said set-up photographing area, The image data transmitting means which transmits the data of said photoed affected part picture to a Personal Digital Assistant via a communication line, Let it be a gist to have a photographing area alteration means which changes said photographing area by receiving the control data transmitted via said communication line from said Personal Digital Assistant, and controlling said photographing part setting-out means.

[0007] In this medical-diagnosis device, it is possible to change a photographing area of an affected part

picture based on control data which received a photoed affected part picture from a Personal Digital Assistant while transmitting to a Personal Digital Assistant via a communication line. Therefore, even when a specialist is not in the spot where an urgent patient was carried, a situation of the affected part can be told to a Personal Digital Assistant which a specialist has promptly and correctly by transmitting an affected part picture. By transmitting control data from a Personal Digital Assistant, and changing a photographing area of the affected part if necessary, even if a specialist is not in the spot, he grasps a situation of the affected part correctly, and it becomes possible to make an appropriate judgment.

[0008]Such a medical-diagnosis device can be used as a medical-diagnosis device which photos one affected part picture of an X-ray picture, a CT image, MR imaging, an ultrasonographic image, and an electrocardiogram picture. Since experience is required in order to grasp a situation of the affected part correctly based on these pictures, it must look for judgment of a specialist who is far away in many cases. Therefore, since it becomes possible so that transmission of an affected part picture is [ then ] possible from these medical-diagnoses device for a distant specialist to grasp a situation of the affected part correctly, and to make an appropriate judgment at a Personal Digital Assistant, it is desirable.

[0009]Via a communication line, a Personal Digital Assistant of this invention corresponding to an above medical-diagnosis device is a Personal Digital Assistant which can transmit and receive data, and comprises the following:

An image data reception means which receives data of this affected part picture via said communication line from a medical-diagnosis device which photos a patient's affected part picture.

An affected part image display means which displays said received affected part picture.

A control data transmitting means which transmits control data for changing a photographing area of said affected part picture to said medical-diagnosis device.

[0010]If it has this Personal Digital Assistant, a situation of the affected part can be promptly grasped by receiving an affected part picture photoed with a medical-diagnosis device via a communication line. A situation of the affected part can be more correctly grasped by transmitting control data and changing a photographing area of an affected part picture if necessary. Therefore, if a specialist is carrying such a Personal Digital Assistant, even when it is not in the spot where an urgent patient was carried, a specialist grasps a situation of the affected part promptly and correctly, and it becomes possible to make an appropriate judgment.

[0011]A medical-diagnosis system of this invention corresponding to an above-mentioned medical-diagnosis device and a Personal Digital Assistant is a medical-diagnosis system which photos and displays a patient's affected part picture, and comprises the following:

A photographing area setting-out means to set up a photographing area of said affected part picture.

An affected part image photographing means which photos an affected part picture of said set-up photographing area.

An image data transmitting means which transmits data of said photoed affected part picture to a Personal Digital Assistant via a communication line.

Have a photographing area alteration means which changes a photographing area of said affected part picture, and said Personal Digital Assistant, An affected part image display means which receives data of said affected part picture via a communication line, and displays a this received affected part picture, and a control data transmitting means which transmits control data for changing a photographing area

of said affected part picture to said photographing area alteration means via said communication line.

[0012]In this medical-diagnosis system, if an affected part picture is transmitted to a Personal Digital Assistant which a specialist has, an affected part picture which a specialist consulted is checked and there is necessity, control data can be transmitted from a Personal Digital Assistant, and a photographing area of an affected part picture can be changed. Therefore, even when a specialist is not in the spot where an urgent patient was carried, a specialist grasps a situation of the affected part promptly and correctly, and it becomes possible to make an appropriate judgment.

[0013]In such a medical-diagnosis device, a Personal Digital Assistant, or a medical-diagnosis system, it is securing a communication line between a medical-diagnosis device and a Personal Digital Assistant, and a circuit is maintained to a connected state and it is good also as exchanging image data or control data using this circuit.

[0014]Where a communication line is secured, if image data or control data is exchanged, data can be transmitted and received certainly and promptly. For this reason, since it becomes possible to enable a specialist who is far away to check a required affected part picture promptly when an urgent patient is carried, and to make a quick and exact judgment by extension, it is desirable.

[0015]In such a medical-diagnosis device, a Personal Digital Assistant, or a medical-diagnosis system, information relevant to diagnosis is memorized for every patient, and it is good also as transmitting this information to a Personal Digital Assistant via a communication line. In addition to information for specifying a patient called a patient's name and an address as information relevant to diagnosis memorized for every patient, information about diagnosis which is indicated in what is called a clinical recording, including consultation record or clinical recording, is memorizable. Of course, when image data of the affected part used for former diagnosis exists, data of this affected part picture can also be memorized. If it carries out like this, in addition to a transmitted affected part picture, a specialist will be referring to information relevant to these diagnoses, and it will also become possible to perform more exact diagnosis.

[0016]It faces transmitting information relevant to these diagnoses to a Personal Digital Assistant which a specialist has, Since it becomes possible [ it is possible to transmit certainly information possible / specification of information which should be transmitted from the Personal Digital Assistant side /, then required, and ] if transmitted information is stored in a Personal Digital Assistant to check required information any number of times, it is desirable.

[0017]Of course, it is good also as memorizing beforehand information relevant to diagnosis memorized for every patient to the Personal Digital Assistant side. Since it is not necessary to transmit information required for diagnosis to a Personal Digital Assistant if it carries out like this, it becomes possible to make an appropriate judgment promptly, and is desirable.

[0018]In the above-mentioned Personal Digital Assistant, while enabling specification of a display rectangle of this affected part picture on said displayed affected part picture, it is good also as transmitting data showing a this specified display rectangle to a medical-diagnosis device as said control data.

[0019]Thus, if change is directed by transmitting data in which a display rectangle which specified a display rectangle and was this specified is shown on a displayed affected part picture when directing change of a range which photos an affected part picture, it will become possible to direct contents of

change that it is simple and exactly.

[0020]In addition, in such a Personal Digital Assistant, it is good also as detecting a coordinate value on said affected part picture corresponding to a specified display rectangle, and transmitting a detected coordinate value to a medical-diagnosis device as said control data.

[0021]Since data volume which transmits will decrease if a center position of a display rectangle or a coordinate value of a corner which faces each other is detected, for example and it transmits as a coordinate value corresponding to a specified display rectangle, it becomes possible to transmit control data promptly, and is desirable.

[0022]What is called a cellular phone can be used as a Personal Digital Assistant mentioned above. A cellular phone is provided with required functions, such as a function to receive a picture via a communication line, a function which displays a received picture, a function which transmits control data. In addition, a possibility of a cellular phone that a specialist is also always carrying since it always carries around is high, therefore since it becomes possible to contact promptly and certainly to a distant specialist, and to look for judgment also when requiring emergency, it is especially suitable.

[0023]It can replace with an above medical-diagnosis device, and can also be considered as the following medical diagnostic equipment. That is, other medical diagnostic equipment of this invention is medical-diagnosis devices which photo and display a patient's affected part picture, and comprises the following:

A photographing area setting-out means to set up a photographing area of said affected part picture.

An affected part image photographing means which photos an affected part picture of said set-up photographing area.

A Personal Digital Assistant selecting means which chooses a Personal Digital Assistant of at least 1 from two or more Personal Digital Assistants registered beforehand.

An image data transmitting means which transmits data of said photoed affected part picture to said selected Personal Digital Assistant via a communication line.

[0024]In this medical-diagnosis device, two or more Personal Digital Assistants are registered beforehand, when an affected part picture is photoed, at least one is chosen from two or more Personal Digital Assistants registered, and data of an affected part picture is transmitted to a selected Personal Digital Assistant. In this way, if a terminal which transmits an affected part picture is chosen from two or more Personal Digital Assistants registered beforehand and it transmits, since it becomes possible to transmit an affected part picture certainly and promptly, it is desirable.

[0025]

[Embodiment of the Invention]A. The 1st working example : in order to explain an operation and effect of this invention more clearly, describe working example of this invention. Drawing 1 is an explanatory view showing the entire configuration of the telediagnosis system 10 of this example. The telediagnosis system 10 of this example comprises the medical-application photographing instrument 20 which photos the picture of the affected part, the control device 30 which controls the medical-application photographing instrument 20, Personal Digital Assistant 40, etc. Although the computerized-tomography scanning equipment which photos CT (Computerized Tomography) picture is used as the medical-application photographing instrument 20 in this example, Various kinds of medical-application photographing instruments which photo an X-ray picture, MR (Magnetic Resonance) picture, an

ultrasonographic image, etc. can be used for others. To a patient, the medical-application photographing instrument 20 can be relatively movable, and can photo the CT image in arbitrary positions. The expansion picture of the affected part can also be photoed if needed. Such control is performed by the control device 30.

[0026]The control device 30 comprises the communications department 38 for connecting a communication line with the operator control panel 32 for operating the medical-application photographing instrument 20, the controller 33, and the monitor 34 for displaying the picture of the photoed affected part, and exchanging Personal Digital Assistant 40 and data, etc. The controller 33 is constituted by what is called microcomputer that connected CPU, ROM, RAM, hard disk HD, etc. mutually by bus. If the operator of the control device 30 operates the operator control panel 32 and directs operation of the medical-application photographing instrument 20, the contents will be interpreted by the controller 33, will be changed into suitable control data, and will be transmitted to the medical-application photographing instrument 20. The medical-application photographing instrument 20 operates according to the control data transmitted in this way. After the data of the CT image photoed with the medical-application photographing instrument 20 is sent to the controller 33 and required processing is performed, it is outputted to the monitor 34 from the controller 33, and the photoed affected part picture is displayed on the monitor 34.

[0027]It is also possible to transmit affected part image data to distant Personal Digital Assistant 40, or to receive data from Personal Digital Assistant 40 via the radio station 50, by the communications department 38 established in the control device 30. Although well-known Personal Digital Assistants, such as a portable personal computer (mobile computer), can be used for Personal Digital Assistant 40, what is called a cellular phone is being used for it by this example.

[0028]In drawing 1, from a viewpoint of avoiding generating of the electromagnetic interference which faces surrounding medical equipment, the communications department 38 should be established in the exterior of the building, and it shall be connected with the controller body with the cable. Of course, it is also possible to include the communications department 38 in a controller body. Generating of an electromagnetic interference is avoidable by transmitting data as follows in such a case. That is, it is good also as transmitting data using a weak electric wave and infrared rays which do not cause an electromagnetic interference, and the antenna which provided this data in the exterior of the building relaying from the communications department 38, and flying an electric wave to the radio station 50. It is good also as sending an electric wave to the radio station 50 from the communications department 38 which built the control device 30 into the network and provided on the network.

[0029]Drawing 2 is a functional block diagram showing the composition of the control device 30 paying attention to a function. The function of the control device 30 comprises a Personal Digital Assistant, the means of communication 100 which performs an exchange of data, the operation means 120 as the medical-application photographing instrument 20, etc. focusing on the control means 110 which manages control of the whole device. The photographing device 124 which photos an affected part picture, the measuring means 122 which measures various information, including a procedure or the conditions for photography, when taking a photograph, etc. are included in the operation means 120. The control means 110 can transmit the data obtained by performing an exchange of the photographing device 124, the measuring means 122, and data via the operation means 120 to a Personal Digital Assistant via the means of communication 100.

[0030]The control means 110 is good also as memorizing the data acquired via the operation means 120 to the memory measure 130. Or the patient database 140 about the information for every [ which is indicated in what is called a clinical recording ] patient is formed, and it is good also as an exchange of data being possible to this patient database 140 via the control means 110. The information for specifying a patient called a patient's name and address, the image data of consultation record, the clinical recording, and the affected part further used for former diagnosis, etc. can be stored in the patient database 140. The control means 110 can read data from the memory measure 130 or the patient database 140 if needed, and can be transmitted to a specialist's Personal Digital Assistant via the means of communication 100. In the Personal Digital Assistant side, the received data is stored in the storage and it is good also as reading data if needed. As a storage, if it is small storages, such as a mass memory and a portability type hard disk, well-known various storages are applicable. Or it is also possible to have a patient database in the Personal Digital Assistant side by memorizing the contents of the patient database 140 to the storage beforehand, and also downloading the contents of the patient database 140 via a communication line.

[0031]Drawing 3 is an explanatory view showing the composition of the monitor 34 of the control device 30. The monitor 34 comprises the main display 35, the sub display 36, the destination specification part 37 that specifies the destination of an affected part picture, etc. as illustrated. The picture of the affected part photoed with the medical-application photographing instrument 20 is displayed on the main display 35. If the specialist's name is beforehand registered into the destination specification part 37, cursor is moved, a specialist is specified and the transmission button of a bottom of screen is clicked, the data of the affected part picture currently displayed on the main display 35 will be transmitted to Personal Digital Assistant 40 which a specialist carries. Drawing 3 shows signs that "Mr. Suzuki" is specified as an example. The number of a specialist's Personal Digital Assistant 40 registered into the controller 33 is memorized beforehand. The transmitted picture is displayed on the sub display 36. By referring to the sub display 36, the picture currently displayed on the screen of a specialist's Personal Digital Assistant 40 can be checked at any time.

[0032]The image data transmitted from the control device 30 is transmitted to a specialist's Personal Digital Assistant 40 via the radio station 50 of a cellular phone. If image data is sent, Personal Digital Assistant 40 will sound a predetermined ringer tone, if the arrival of data is told and a specialist performs predetermined operation, a circuit will be connected and an affected part picture will be displayed on the screen of Personal Digital Assistant 40. Drawing 4 shows signs that the affected part picture transmitted to the screen of Personal Digital Assistant 40 which a specialist has is displayed. By checking the picture displayed on the screen, the specialist can grasp the state of the affected part correctly. Therefore, even when using the above telediagnosis systems 10 and an urgent patient is carried at the time of a specialist's absence. A specialist is enabled to grasp the situation of the affected part correctly by transmitting an affected part picture to a specialist's Personal Digital Assistant 40, and exact directions can be obtained from a specialist by extension. In this example, the communication line is connected between the control device 30 which transmits an affected part picture, and a specialist's Personal Digital Assistant 40. For this reason, about the matter which the transmitted affected part picture which came does not show, the specialist can also check to the doctor in charge of the spot using the talking function of Personal Digital Assistant 40.

[0033]But when it is necessary to check the picture from angle with it, or also when I have to have a new

affected part picture transmitted from the Reason an affected part picture is too small to distinguish a fine portion, it may produce only from the transmitted affected part picture. [ difficult judgment and ] [ another ] In such a case, it is possible to direct it to transmit data to the control device 30 in the tediagnosis system 10 of this example from Personal Digital Assistant 40 which a specialist has, and to have a new affected part picture transmitted.

[0034] Signs that it directs from a specialist's Personal Digital Assistant 40 are explained using drawing 5 and drawing 6 so that a new affected part picture may be transmitted. If a specialist performs predetermined operation to Personal Digital Assistant 40 after checking the transmitted affected part picture (refer to drawing 4), the display of a screen will cut and change to the display shown in drawing 5. The specialist can choose an item applicable out of the displayed sundry items by doubling the cursor of Personal Digital Assistant 40. For example, if cursor is chosen according to the position displayed as "1. expansion" to expand the transmitted affected part picture, it will cut and change to a display as the display of a screen shows to drawing 6. In the screen of drawing 6, the grade to which an affected part picture is expanded by operating the button of Personal Digital Assistant 40 and driving the number to "1" - "5" into the prescribed position on a screen can be set up in the range from one step to five steps. The magnifying power per step is set up beforehand. In this way, if it sets up how many pictures are made to expand, a setting detail will be transmitted to the control device 30 by operating the button of Personal Digital Assistant 40.

[0035] It is received via a communication line in the communications department 38 of the control device 30, and the setting detail transmitted from the specialist's Personal Digital Assistant 40 is displayed on the monitor 34. After the doctor in charge of the spot operates the operator control panel 32 based on the contents displayed on the monitor 34 and photos a new affected part picture, he transmits to a specialist's Personal Digital Assistant 40 again. As a result, a new affected part picture as shown in drawing 7 will be displayed on the screen of a specialist's terminal. A specialist is checking the new affected part picture transmitted in this way, and he grasps the situation of the affected part correctly and it becomes possible to issue exact directions to the doctor in charge of the spot.

[0036] Of course, I can also have a new affected part picture if necessary transmitted any number of times by repeating the above operation and performing it. For example, the specialist should judge that it was necessary to also check the portion outside the limit on the right-hand side of a screen, seeing the affected part picture shown in drawing 7. In this case, a specialist is performing predetermined operation again and switches the display of the screen of Personal Digital Assistant 40. subsequently, cursor is moved and it is shown in drawing 8 -- as -- "5. -- after choosing move" to the right, the step to which it is made to move on the screen shown in drawing 9 is driven in, and a new setting detail is transmitted to the control device 30. In the control device 30, an affected part picture is photoed according to the newly received control content, and it is again transmitted to Personal Digital Assistant 40. As a result, the specialist can check the affected part picture of the portion besides a right side frame by the picture shown in drawing 7. the case where it is judged that a specialist wants to see the CT image of a different section from the transmitted affected part picture -- for example -- "7. -- this side -- move" -- or -- "8. -- the affected part picture of a different section can also be checked by choosing move" as the back.

[0037] Thus, even when it is in a remote place, looking at the transmitted affected part picture, by correcting the photographing part of the affected part suitably, the specialist can grasp the situation of



the affected part correctly and can make an appropriate judgment. Since a specialist can change a photographing part directly compared with the case where a photographing part is changed indirectly, by contacting the doctor in charge of the spot orally, it becomes possible to acquire a desired affected part picture promptly.

[0038]In the above explanation, if a new setting detail is received, a new affected part picture shall be photoed at whenever [ the / given ], but it may be performed as follows. An affected part picture is beforehand photoed with high resolution, and it memorizes to the hard disk of the controller 33. And when the setting detail of the purport that a part of affected part picture is expanded is received from a specialist's Personal Digital Assistant 40, it is good also as transmitting the picture acquired by performing Image Processing Division to the picture memorized, and creating an expansion picture to a specialist's Personal Digital Assistant 40. Since the affected part picture demanded since an affected part picture new whenever it receives the directions from a specialist did not need to be photoed when carrying out like this can be transmitted promptly, it is desirable.

[0039]It can also be performed as follows, although the setting detail transmitted by the specialist was displayed on the monitor 34 and we decided that the doctor in charge of the spot operates the operator control panel 32 in the above explanation based on this display. The communications department 38 of the control device 30 delivers to the controller 33 that it receives the setting detail transmitted by the specialist. The controller 33 photos a new affected part picture by transmitting the control data by which generated the control data of the medical-application photographing instrument 20, and it was generated to the medical-application photographing instrument 20 based on the received setting detail. In this way, the photoed new affected part picture is again transmitted to a specialist's Personal Digital Assistant 40 via a communication line. If it does in this way, a specialist will be checking a suitable affected part picture the same with being in the spot and operating the control device 30 in the remote place, and it will become possible to grasp the situation of the affected part correctly.

[0040]Here, the control data for controlling the medical-application photographing instrument 20 shall be generated by the controller 33 in the control device 30. But two or more fundamental control codes are beforehand memorized to Personal Digital Assistant 40, and it is also possible to generate control data in the Personal Digital Assistant side by combining a control code according to the contents which the specialist set up. In this way, when transmitting control data from Personal Digital Assistant 40, the controller 33 of the control device 30 should just supply the received control data to the medical-application photographing instrument 20 as it is.

[0041]As explained above, the situation of the affected part can be correctly grasped also by the specialist who is not in the spot where the patient was carried by checking the affected part picture transmitted via the communication line, correcting the photographing area of the affected part and checking a new affected part picture.

[0042]B. The 2nd working example : in the 1st working example described above, when the specialist who received the affected part picture tried to change the display rectangle of a picture, the data which described contents of change was transmitted to the control device 30 which has transmitted the affected part picture. On the other hand, it is good also as directing change of a display rectangle by detecting a coordinate value on the screen of the Personal Digital Assistant in which the affected part picture was displayed, and transmitting the detected coordinate value. Hereafter, such 2nd working example is described.

[0043]Also in the 2nd working example, if the data of the affected part picture transmitted from the control device 30 receives a message in Personal Digital Assistant 40 like the 1st working example and a specialist connects a circuit, on a screen, an affected part picture as shown in drawing 4 will be displayed. When it is thought that the specialist who looked at the displayed affected part picture wants to move a little photographing area, for example, the screen of Personal Digital Assistant 40 is switched and "3. movement" is chosen. Then, a screen cuts and changes again, and as shown in drawing 11, the picture which has the cursor 42 for exclusive use is displayed on an affected part picture. A specialist pushes the transmission button of Personal Digital Assistant 40, after moving the position of the cursor 42 to a part to bring in the center of a screen on the displayed affected part picture. If a transmission button is pushed, Personal Digital Assistant 40 will detect the coordinate value of the cursor 42 on a screen, and will transmit the data of the detected coordinate value to the control device 30.

[0044]If the controller 33 of the control device 30 is received [ the coordinate value sent in this way ], after deducing the affected part position which should be photoed from a coordinate value, it controls the medical-application photographing instrument 20, and photos a new affected part picture. Since the picture transmitted to Personal Digital Assistant 40 is displayed on the sub display 36 of the monitor 34 formed in the control device 30 as mentioned above, the affected part position which should be photoed from the transmitted coordinate value by which it came can be determined. The control device 30 transmits again the data of the new affected part picture acquired in this way to a specialist's Personal Digital Assistant 40.

[0045]A specialist looks at the screen of Personal Digital Assistant 40, and when it is thought that he would like to expand and display a part of affected part picture, "1. expansion" is chosen on the screen shown in drawing 10. Then, the screen of Personal Digital Assistant 40 cuts and changes, and a screen as shown in drawing 12 is displayed. The rectangle cursor 44 which shows an enlargement range with an affected part picture is displayed on the screen which cut and was displayed by changing. As for the position of the upper left corner of the rectangle cursor 44, and the position of a lower right corner, it is possible to make it move by operating Personal Digital Assistant 40. A specialist moves the position of the upper left corner of the rectangle cursor 44 first, subsequently moves the position of the lower right corner of the rectangle cursor 44, and after he surrounds a portion to expand to in the affected part picture on a screen with the rectangle cursor 44, he pushes a transmission button. If a transmission button is pushed, Personal Digital Assistant 40 will detect the coordinate value of the upper left corner of the rectangle cursor 44, and a lower right corner, and will transmit the group of the detected coordinate value to the control device 30.

[0046]The controller 33 of the control device 30 extracts two coordinate values from the data which was transmitted from Personal Digital Assistant 40 and which came, and sets up the field which it is going to expand. Since the affected part picture previously transmitted to Personal Digital Assistant 40 is memorized by the control device 30, to it, the field which it is going to expand is detectable from the coordinate value of an upper left corner and the coordinate value of a lower right corner which were transmitted from Personal Digital Assistant 40. Subsequently, the controller 33 generates control data so that the detected field may be photoed, it supplies it to the medical-application photographing instrument 20, and photos a new affected part picture. In this way, if a new affected part picture is acquired, it will be again transmitted to a specialist's Personal Digital Assistant 40 via a communication line.

[0047] Thus, in the 2nd working example, the movement magnitude of an affected part picture or an enlargement range can be specified on the screen of Personal Digital Assistant 40. For this reason, a specialist becomes possible [ becoming possible not to carry out the direct control of the control device 30, but to display an affected part picture also with optimal \*\* promptly, and making a suitable judgment promptly by extension ], looking at the screen of Personal Digital Assistant 40.

[0048] In the explanation mentioned above, after Personal Digital Assistant 40 moves cursor to the position of the request on an affected part picture, it shall detect the coordinate value of cursor and shall transmit the detected coordinate value to the control device 30. However, it is good also as transmitting the picture not only in this but the state where cursor was moved to the desired position on the affected part picture for example, as shown in drawing 11 or drawing 12 to the control device 30 as it is. The control device 30 which received such image data displays a picture with cursor on the monitor 34. If the doctor in charge of the spot where the urgent patient was carried checks the picture on the monitor 34 displayed in this way and the control device 30 is operated, he can photo the affected part picture in alignment with an intention of the specialist who is far away.

[0049] As mentioned above, although various kinds of working example has been described, this invention is not restricted to working example of all above, and can be carried out in various modes in the range which does not deviate from the gist.

[0050] For example, data may not be exchanged, with a communication line connected, but affected part image data may be transmitted using the mail function which a Personal Digital Assistant has. The setting detail which looked at the transmitted affected part picture and the specialist set up is replied using the reply function of e-mail. In this way, if it transmits using the reply function of e-mail, since it becomes possible to transmit a setting detail certainly and simple, it is desirable.

#### [Claim(s)]

[Claim 1] A photographing area setting-out means to be a medical-diagnosis device which photos and displays a patient's affected part picture, and to set up a photographing area of said affected part picture, An affected part image photographing means which photos an affected part picture of said set-up photographing area, An image data transmitting means which transmits data of said photoed affected part picture to a Personal Digital Assistant via a communication line, A medical-diagnosis device provided with a photographing area alteration means which changes said photographing area by receiving control data transmitted via said communication line from said Personal Digital Assistant, and controlling said photographing part setting-out means.

[Claim 2] A photographing area setting-out means to be a medical-diagnosis device which photos and displays a patient's affected part picture, and to set up a photographing area of said affected part picture, An affected part image photographing means which photos an affected part picture of said set-up photographing area, A medical-diagnosis device provided with a Personal Digital Assistant selecting means which chooses a Personal Digital Assistant of at least 1, and an image data transmitting means which transmits said photoed data of an affected part picture to said selected Personal Digital Assistant via a communication line out of two or more Personal Digital Assistants registered beforehand.

[Claim 3] A medical-diagnosis device in which it is the medical-diagnosis device according to claim 1 or 2, and said affected part image photographing means is a means to photo electrocardiogram an X-ray picture, a CT image, MR imaging, an ultrasonographic image, or a picture, as said affected part picture.

[Claim 4] A medical-diagnosis device provided with a communication line securing means which is the medical-diagnosis device according to claim 1 or 2, secures said communication line between said Personal Digital Assistants, and maintains a connected state in order to exchange said image data or said control data.

[Claim 5] A patient information memory measure which is the medical-diagnosis device according to claim 1, and memorizes information relevant to diagnosis for every patient, A medical-diagnosis device provided with a patient information reply means which replies said information specified with said Personal Digital Assistant via said communication line out of information relevant to diagnosis memorized for said every patient.

[Claim 6] An image data reception means which receives data of this affected part picture via said communication line from a medical-diagnosis device which is a Personal Digital Assistant which can transmit and receive data, and photos a patient's affected part picture via a communication line, A Personal Digital Assistant provided with an affected part image display means which displays said received affected part picture, and a control data transmitting means which transmits control data for changing a photographing area of said affected part picture to said medical-diagnosis device.

[Claim 7] A medical-diagnosis device provided with a communication line securing means which is the Personal Digital Assistant according to claim 6, secures said communication line between said medical-diagnosis devices, and maintains a connected state in order to exchange said image data or said control data.

[Claim 8] A Personal Digital Assistant which is the Personal Digital Assistant according to claim 6, and is a means to be provided with a display rectangle setting means which specifies a display rectangle of this affected part picture on said displayed affected part picture, and to transmit data in which said control data transmitting means expresses said specified display rectangle as said control data.

[Claim 9] A Personal Digital Assistant which is the Personal Digital Assistant according to claim 8, and is a means by which it has a coordinate value detection means to detect a coordinate value on said affected part picture corresponding to said specified display rectangle, and said control data transmitting means transmits said detected coordinate value as said control data.

[Claim 10] A Personal Digital Assistant provided with a diagnostic-information memory measure which is the Personal Digital Assistant according to claim 6, and receives and memorizes information relevant to diagnosis memorized for every patient via said communication line.

[Claim 11] A photographing area setting-out means to be a medical-diagnosis system which photos and displays a patient's affected part picture, and to set up a photographing area of said affected part picture, An affected part image photographing means which photos an affected part picture of said set-up photographing area, An image data transmitting means which transmits data of said photoed affected part picture to a Personal Digital Assistant via a communication line, Have a photographing area alteration means which changes a photographing area of said affected part picture, and said Personal Digital Assistant, A medical-diagnosis system provided with an affected part image display means which receives data of said affected part picture via a communication line, and displays a this received affected part picture, and a control data transmitting means which transmits control data for changing a photographing area of said affected part picture to said photographing area alteration means via said communication line.

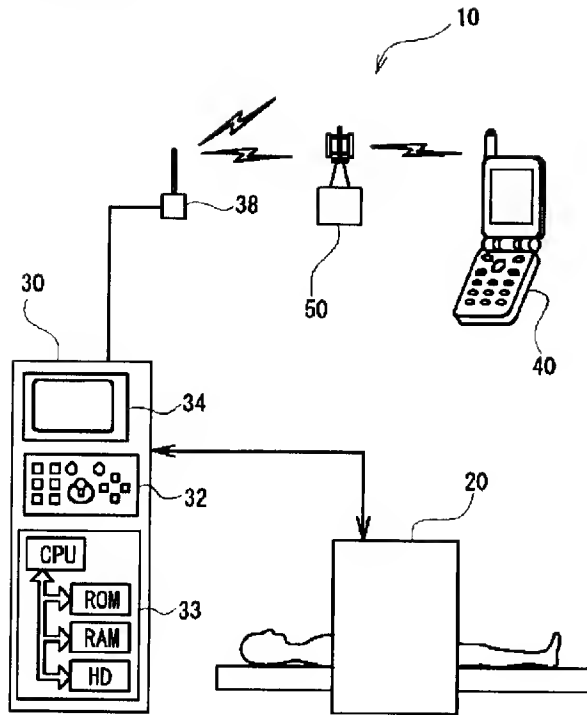
[Claim 12] In order to be the medical-diagnosis system according to claim 11 and to exchange said image

data or said control data, A medical-diagnosis system which is a means by which it has a communication line securing means which secures said communication line and maintains a connected state, and said image data transmitting means and said control data transmitting means transmit each data via said secured communication line.

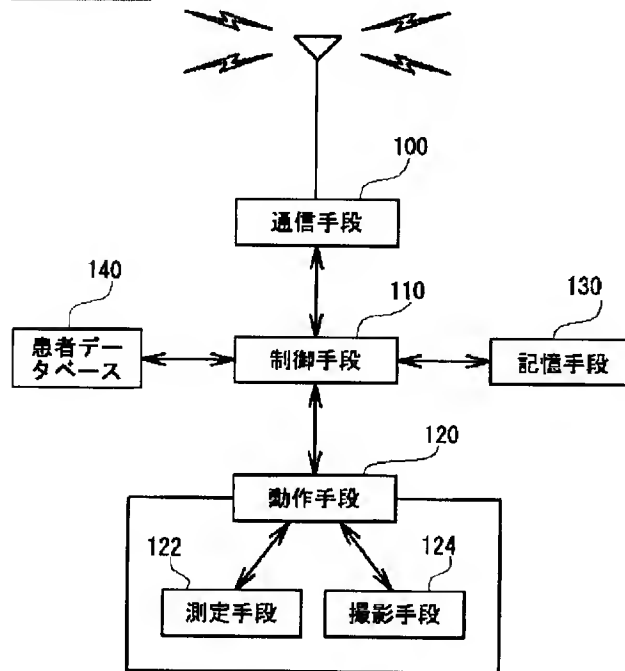
[Claim 13]Are the medical-diagnosis system according to claim 11, and said Personal Digital Assistant, A Personal Digital Assistant which is a means to be provided with a display rectangle setting means which specifies a display rectangle of this affected part picture on said displayed affected part picture, and to transmit data in which said control data transmitting means expresses said specified display rectangle as said control data.

[Claim 14]A patient information memory measure which is the medical-diagnosis system according to claim 11, and memorizes information relevant to diagnosis for every patient, It has a patient information reply means which replies said information specified with said Personal Digital Assistant via said communication line out of information relevant to said diagnosis memorized for every patient, A medical-diagnosis system provided with an information setting means which specifies information which should be transmitted via a communication line out of information relevant to said diagnosis said Personal Digital Assistant was remembered to be for every patient.

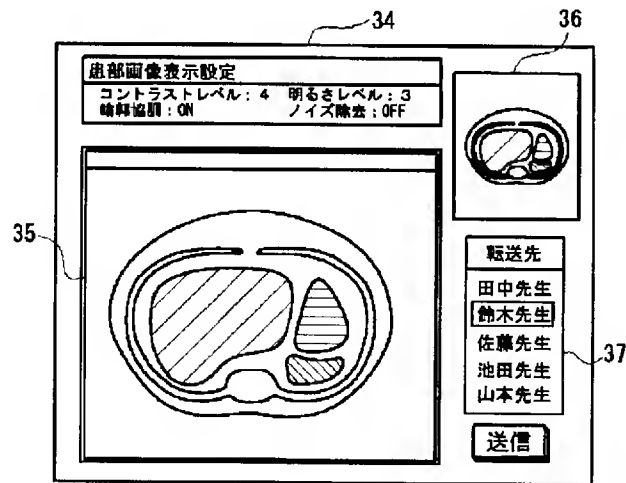
[Drawing 1]



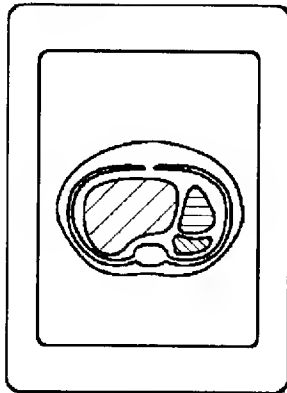
[Drawing 2]



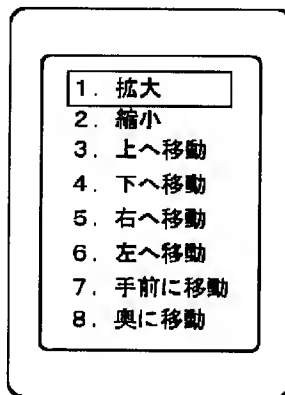
[Drawing 3]



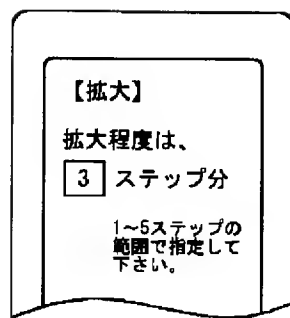
[Drawing 4]



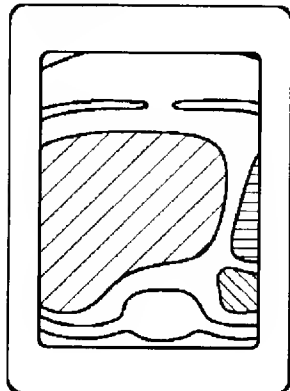
[Drawing 5]



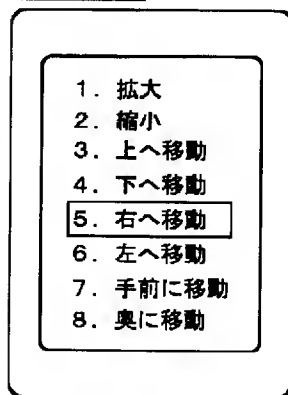
[Drawing 6]



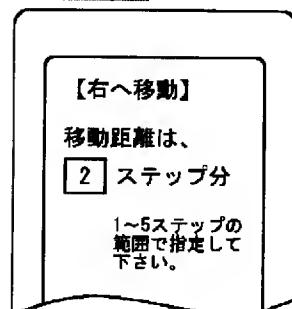
[Drawing 7]



[Drawing 8]

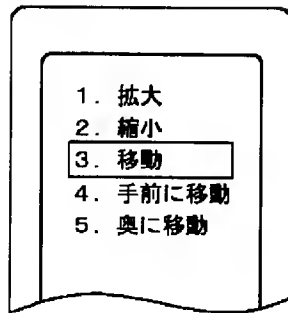


[Drawing 9]

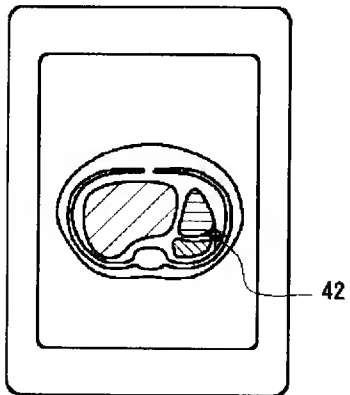




[Drawing 10]



[Drawing 11]



[Drawing 12]

